EXHIBIT B

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC. AND OCLARO, INC.,
Petitioners,

v.

OYSTER OPTICS, LLC,
Patent Owner.

Case IPR2017-01871
Patent 7,620,327

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S LIST OF EXHIBITS

Exhibit Number	Exhibit Description
2001	Prosecution History of U.S. Patent 7,620,327
2002	Reserved
2003	Reserved
2004	Reserved
2005	Reserved

Pursuant to 37 C.F.R. § 42.107, Patent Owner Oyster Optics, LLC ("Oyster" or "Patent Owner") files this preliminary response to the Petition, setting forth reasons why the Petition for *inter partes* review ("IPR") of U.S. Patent 7,620,327 (the "'327 patent"), claims 1-12, 22, and 33, as requested by Cisco Systems, Inc. and Oclaro, Inc. (collectively, "Petitioners") should be denied. Arguments presented herein are presented without prejudice to presenting additional arguments in a later response should the Board institute IPR review.[1]

I. INTRODUCTION

The '327 patent discloses a transceiver card that includes a transmitter having a laser, a fiber output, a fiber input, a receiver, and an energy level detector that is optically connected between the receiver and the fiber input to measure an energy level of optical signals. Per the challenged claims in this proceeding, the energy level detector includes a plurality of thresholds, which may indicate a drop in amplitude of the optical signals.

Petitioners' challenges against these claims uniformly fail because the asserted art does not disclose or suggest a transmitter ***having a laser*** arranged on the transceiver card, along with a receiver and the other elements of the claimed transceiver card. This missing element of the claims is not accounted for in

[1] No waiver is intended by Patent Owner and no waiver attaches to arguments not presented in a patent owner's preliminary response. 35 U.S.C. § 323.

Petitioners' challenges even though the Petition acknowledges this deficiency of the art, and in particular its absence from secondary reference Ade.[2] The primary references, Treyz,[3] and Roberts '840,[4] are not relied upon to disclose or suggest this feature, and do not remedy this deficiency. Similarly, the secondary references, Ikeda,[5] Hooijmans,[6] and Kobayashi,[7] are not relied upon to disclose or suggest this feature, and do not remedy this deficiency.

With regard to Grounds 1-4, Petitioners' challenges also fail because the primary reference Treyz does not disclose or suggest arranging "an energy level detector" on the same transceiver card as a receiver (and the transmitter having a laser), and also fails to disclose "an energy level detector optically connected between the receiver and the fiber input" as required by independent claim 1. In fact, the Treyz reference does not disclose an energy detector coupled to a receiver

[2] Ex. 1024, U.S. Patent No. 5,347,601 to Ade et al. ("Ade")

[3] Ex. 1010, U.S. Patent No. 6,529,316 to Treyz et al. ("Treyz")

[4] Ex. 1009, U.S. Patent No. 5,969,840 to Roberts ("Roberts '840")

[5] Ex. 1033, U.S. Patent No. 7,016,612 to Ikeda et al. ("Ikeda")

[6] Ex. 1008, Coherent Optical System Design by Pieter W. Hooijmans ("Hooijmans")

[7] Ex. 1025, U.S. Patent No. 6,404,281 to Kobayashi et al. ("Kobayashi")

in any configuration. The secondary references do not remedy this deficiency of Treyz.

Further, the '327 patent issued over Treyz, which appears on the face of the '327 patent. Treyz was considered by the Examiner, and was even used in a rejection of the claims. Of course, this rejection was withdrawn and the '327 patent issued after careful consideration of Treyz by the Examiner. Petitioners fail to address why the Board should entertain a challenge based upon a reference closely reviewed and made part of an Examiner's rejection, and ultimately overcome during prosecution.

With regard to Grounds 5-8, Petitioners' challenges also fail because the primary reference Roberts '840 does not disclose or suggest arranging "an energy level detector" on the same transceiver card with a receiver. The secondary references do not remedy this deficiency of Roberts '840.

Petitioners' challenges against the dependent claims fail for the same reasons that the challenges against claim 1 fail, and also contain additional flaws. Claim 2 requires that the "energy level detector" of claim 1 include "an OR gate. However, Petitioners do not identify any OR gate in the Ikeda reference relied upon to show this feature. Claim 5 requires "a photodiode and a line[a]r or logarithmic amplifier scaling an output of the photodiode." Here, Petitioners' rely on the Kobayashi reference, but Petitioners fail to present a coherent challenge

based on Kobayashi, and do not identify in Kobayashi any amplifier that scales an output of a photodiode. Claim 10 recites that the plurality of thresholds indicates a drop in amplitude of a phase-modulated signal. But Petitioners fail to present any evidence supporting their characterization of this feature in any of the cited references, and completely fail to address the "plurality of thresholds" portion of claim 10.

Finally, Petitioners challenge two dependent claims in this proceeding, claims 22 and 33 ***without challenging their respective independent claims***, claims 14 and 25. Instead, Petitioners challenge those independent claims in a separate proceeding. Therefore, dependent claims 22 and 33 cannot be challenged in this proceeding. Petitioners' split-attack is unclear and unfairly prejudicial to Patent Owner. The Board should exercise its discretion and deny institution of against dependent claims 22 and 33.

These defects, and other defects in the Petition, are addressed below.

II. BACKGROUND

A. Related Proceedings Bearing on This Proceeding[8]

In addition to the instant matter, the '327 patent is the subject of IPR2017-01882, filed by Petitioners, and IPR2017-02173 filed by Alcatel-Lucent USA Inc.,

[8] A complete list of the related matters is contained in Patent Owner's Mandatory Notices per 37 C.F.R. § 42.8(b)(2).

Ciena Corp., Coriant (USA) Inc., Coriant North America, LLC, Coriant Operations, Inc., Infinera Corp., and Fujitsu Network Communications, Inc. Notably, in the petition submitted in IPR2017-02173, the petitioners (Petitioners' co-defendants in related litigation) challenge claims 1-39 but provide no meaningful explanation for why the Board should permit multiple repetitive challenges, including IPR2017-02173 filed nearly two months after the current case, against common claims of the '327 patent.

B. Overview of U.S. Patent No. 7,620,327

The '327 patent was filed on July 3, 2002, and issued on Nov. 17, 2009. The '327 patent claims the benefit of U.S. Provisional Patent Application No. 60/303,932, filed on July 9, 2001. Therefore, the '327 patent is not expected to expire prior to any Final Written Decision in this IPR. *See* 35 U.S.C. § 154(a)(2); 37 C.F.R. § 42.100(b).

The '327 patent is entitled "Fiber-Optic Telecommunications Card with Energy Level Monitoring." The claims of the '327 patent relate generally to fiber optic telecommunications, and more particularly to a transmitter having a laser and modulator, a receiver, and an energy level detector all arranged on a common transceiver card for fiber optic telecommunications with a remotely located transceiver.

The '327 patent expressly discloses a transceiver card for a telecommunication box. The transceiver card includes a transmitter having a laser, a modulator, a controller, a receiver, and an energy level detector. The transmitter transmits optical signals. A fiber optic output from the transceiver card is provided for connecting to a first optical fiber transmitting data to other locations along the telecommunication route. A fiber optic input is provided for optically connecting a second optical fiber to the transceiver card to receive incoming data being transmitted from other locations along the telecommunication route. The transceiver card's energy level detector has a plurality of thresholds, which may indicate a drop in amplitude of a phase-modulated signal. The energy level detector is optically connected between the receiver and a fiber optic input to measure an energy level of the incoming optical signals received via the second optical fiber. The '327 patent also discloses a splitter, a photodetector to measure a split optical signal, and a detector controller connected electrically to the photodetector.

Fig. 1 of the '327 patent depicts how an existing telecommunications box 2 can be refitted with a transceiver card 1 consistent with the invention of the

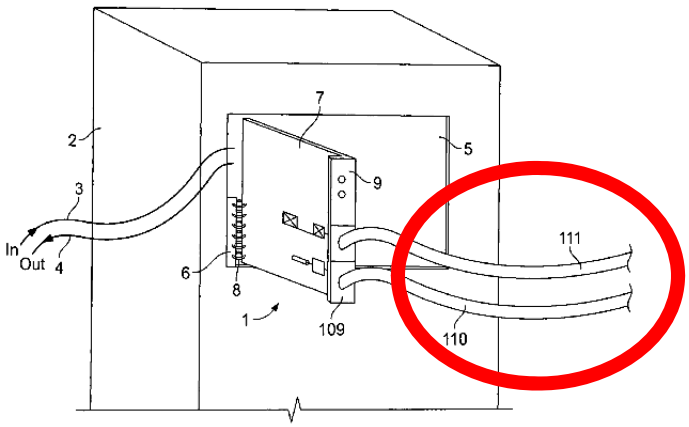


FIG. 1

'327 patent. '327 patent, 4:6:24. Output optical fiber 110 and input optical fiber 111 extend from box 2, and they are not connected to each other, either in Fig. 1 or anywhere else in the '327 patent. *See* annotated Fig. 1 above and annotated Fig. 2 below (emphasis added to identify output optical fiber 110 and input optical fiber 111).

Fig. 2 shows transceiver card 1 in more detail. Transmitter 10 transmits signals over output optical fiber 110 to a location along the telecommunication route. Electronic input data stream 19 is fed to the controller 18, which then controls modulator 16 to modulate the light from laser 12 as a function of the input data 19. '327 patent, 4:25-38. The transmitter may operate in a phase-modulated mode. *Id.*, 4:39-47.

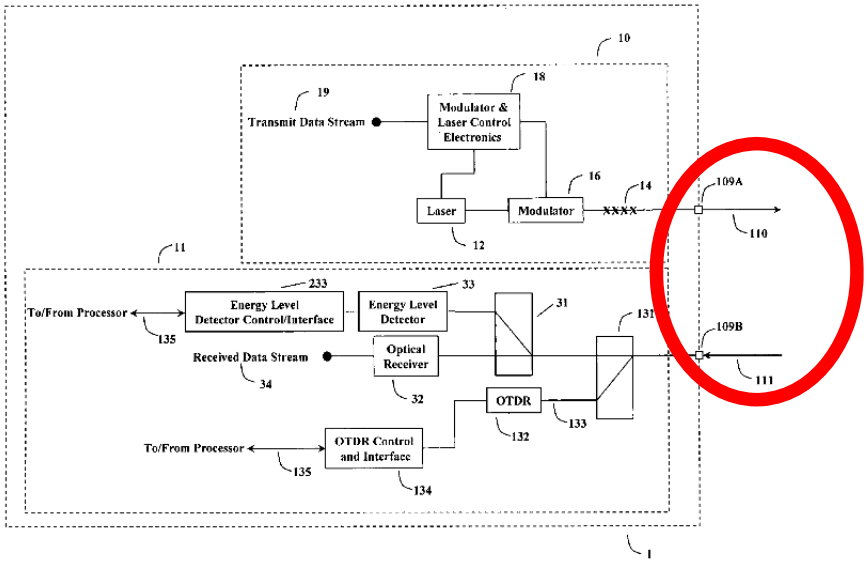


Figure 2

Receiver 11 includes two coupler/splitters 31 and 131, each functioning as a splitter. Splitter 131 allows optical time-domain reflectometer ("OTDR") 132 on transceiver card 1 to be commanded to continuously operate without interruption or corruption of the received data stream 34. Splitter 31 splits off a portion of the

remaining light, directing part of the optical energy to an energy level detector 33 and passes the residual light to an optical receiver 32. Optical receiver 32 converts the optical signals from optical to electronic form to recover the electronic data stream 34 as appropriate for the optical modulation technique employed. '327 patent, 4:48-5:5.

The challenged claims of the '327 patent include an "energy level detector optically connected between the receiver and the fiber input," an embodiment of which is shown in Figure 3. There, energy level detector 33 is connected between the receiver 32 and input optical fiber 111 (optical connection shown as 31). The energy level detector 33 monitors the incoming light energy in the input optical fiber 111 to indicate a potential optical tap, tampering, or other degradation of the optical signal. A photodetector converts an optical signal into an electrical signal. A low pass filter 154 may filter the electrical signal to provide a signal representing an average optical power. After filtering the signal, the signal representing the average optical power may be conditioned and scaled by either a logarithmic or linear amplifier 155. The

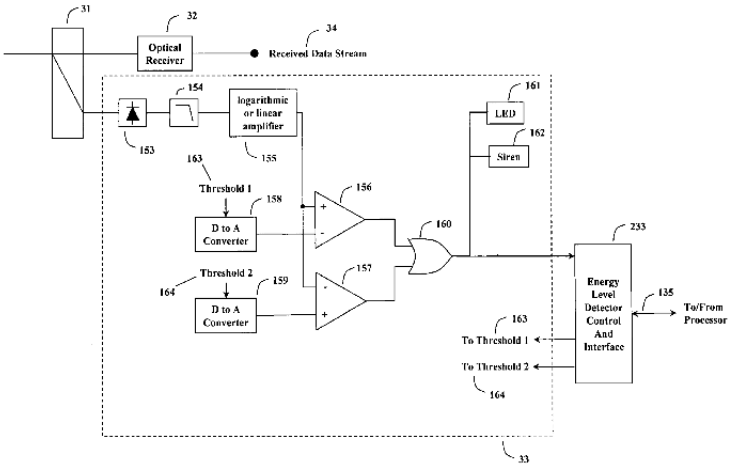


Figure 3

configuration allows digital operation regardless of the span length of the optical fiber. '327 patent, 5:6-39.

After being scaled by the linear or logarithmic amplifier 155, comparators compare the signal to reference voltages, to determine one or more alarm states, for example. Comparator 156 transitions to high output when above a reference voltage. Comparator 157 transitions to a high output when below a reference voltage. The output of OR gate 160 transitions to a high output when either comparator 156 or comparator 157 provides a high output. One or more thresholds 163 and 164 may be established to provide reference voltage levels for comparison. '327 patent, 5:55-6:12.

Elements of an exemplary system are claimed in challenged claims 1-12, 22, and 33 of the '327 patent, reproduced below.

III. CLAIMS IN DISPUTE

In full, challenged claims 1-12, 22, and 33 of the '327 patent recite (with the highlighting of the elements to be addressed below):

> 1. A ***transceiver card*** for a telecommunications box for transmitting data over a first optical fiber and receiving data over a second optical fiber, ***the card comprising***:
>
> a transmitter for transmitting data over the first optical fiber, ***the transmitter having a laser***, a modulator, and a controller receiving input data and controlling the

modulator as a function of the input data, the transmitter transmitting optical signals for telecommunication as a function of the input data;

a fiber output optically connected to the laser for connecting the first optical fiber to the card;

a fiber input for connecting the second optical fiber to the card;

a receiver optically connected to the fiber input for receiving data from the second optical fiber; and

an energy level detector optically connected between the receiver and the fiber input ***to measure an energy level of the optical signals***, wherein the energy level detector includes a plurality of thresholds.

2. The card as recited in claim 1 wherein the energy level detector includes an ***OR gate***.

3. The card as recited in claim 1 wherein the modulator is a phase modulator.

4. The card as recited in claim 3 wherein the receiver receives phase-modulated signals.

5. The card as recited in claim 1 wherein the energy level detector includes ***a photodiode and a liner or logarithmic amplifier scaling an output of the photodiode***.

6. The card as recited in claim 1 wherein the thresholds are programmable.

7. The card as recited in claim 1 wherein the energy level detector includes a detector controller capable of setting values for the thresholds.

8. The card as recited in claim 7 wherein the detector controller receives an indication of a threshold being crossed.

9. The card as recited in claim 1 wherein the plurality of thresholds bound an acceptable energy range for the received light.

10. The card as recited in claim 1 wherein the plurality of thresholds indicate a ***drop in amplitude of a phase-modulated signal***.

11. The card as recited in claim 1 wherein the plurality of thresholds indicate an increase in an optical energy level.

12. The card as recited in claim 1 wherein the energy level detector measures optical power.

> 22. The card as recited in ***claim 14*** [claim 14 is not challenged]
>
> wherein the plurality of thresholds bound an acceptable energy range for the received light.
>
> 33. The card as recited in ***claim 25*** [claim 25 is not challenged] wherein the plurality of thresholds bound an acceptable energy range for the received light.

'327 patent, 6:45-7:22; 7:27-46; 7:65-67; 8:6-24; 8:43-45.

IV. THE CHALLENGED CLAIMS ARE NOT UNPATENTABLE

In order to justify the institution of an *inter partes* review, a petitioner must establish that there is a "reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Petitioners here have failed to establish that each of the challenged '327 patent claims are unpatentable over the asserted art.

As discussed further below, the challenges have a number of defects. Most glaringly, Petitioners' improper combinations of references fail to disclose or suggest a transceiver card with a transmitter "having a laser" and an "energy level detector" as required by all challenged claims. Additionally, all of the challenges fail because Petitioners adopt an implicitly incorrect interpretation of the claims to require an optical simulator with a loop-back configuration of the optical fiber for

self-testing purposes, where the transmitted optical signals are the same optical signals being received by the transceiver card. Petitioners adopt this interpretation even though it excludes every disclosed embodiment in the specification, and is contrary to how the claims would have been interpreted by a POSITA. These defects, further exacerbated by Petitioners' continuous misinterpretations of the asserted references, render each of the challenges deficient. The Board should deny the Petition and decline to institute the *inter partes* review.

A. Petitioners Fail to Provide Any Claim Construction Analysis and Apply an Incorrect Reading of the Claims to Require an Optical Simulator with a "Loop-Back" Optical Fiber for Self-Testing," Even Though the Two Optical Fibers on the Transceiver Card are Not Connected

1. Petitioners Fail to Explain How the Challenged Claims are to be Construed

In the Petition's section directed to claim construction, Petitioners fail to provide any argument regarding how the claims would be understood by a person of ordinary skill in the art, stating only that the "terms in the challenged claims of the '327 Patent should each be construed according to the broadest reasonable interpretation in view of the specification." Pet., 26. Dr. Blumenthal, Petitioners' technical declarant ("Blumenthal", Ex. 1003), offers no further discussion of the proper construction of the '327 patent's terms. Ex. 1003, ¶72. This failure renders the Petition fatally defective.

"It is elementary in patent law that, in determining whether a patent is valid and, if valid, infringed, the first step is to determine the meaning and scope of each claim in suit." *Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1206 (Fed. Cir. 1992). In omitting the "first step," Petitioners unfairly place the burden on Patent Owner and the Board to divine how Petitioners are interpreting the key aspects of the claims of the '327 patent. These defects preclude Petitioners from offering reasonable interpretations of the claims or basing their challenges upon the necessary reasonable interpretations. Accordingly, Petitioners' challenges fail to comport with mandatory Board regulations requiring petitioners to state "[h]ow the challenged claim is to be construed" and "[h]ow the construed claim is unpatentable …." 37 C.F.R. § 42.104(b)(3)-(4).

Thus, the Board should exercise its discretion and decline to consider the Petition.

2. Petitioners Misinterpret the Challenged Claims to Require an Optical Simulator with a "Loop-Back" Optical Fiber for Self-Testing," but the Output and Input Optical Fibers on the Transceiver Card are Not Connected

Petitioners' lack of claim construction analysis is critical because each of Petitioners' challenges, whether based on Treyz or Roberts '840, treats the challenged claims as including an optical simulator with a "loop-back" optical fiber for self-testing configuration, wherein the transmitted optical signals are the same optical signals being received by the transceiver card. *See* Pet., 31-35, 62-63.

Petitioners are incorrect to propose such a combination because claim 1 does not contain any loop-back requirement.

As noted above, Petitioners failed to provide any argument regarding how the claims would be understood by a person of ordinary skill in the art. Yet, when analyzing claim 1, Petitioners add a loop-back optical fiber requirement. Pet., 41, 62. Petitioners' sole disclosed basis for adding this fabricated requirement is Petitioners' incorrect understanding of the antecedent basis of "the optical signals" in independent claim 1. In advancing their incorrect position, Petitioners do not view the claims as a whole or in the context of the specification of the '327 patent, and even improperly exclude every disclosed embodiment from the scope of the claims. Pet., 4.

Under the broadest reasonable interpretation of claim 1, it does not contain a loop-back requirement of the optical fiber. First, claim 1 does not recite "loop-back" or suggest "loop-back" of the optical fiber output from the transmitter back to the receiver on the same transceiver card. The output optical fiber 110 is expressly shown in Figure 1 of the '327 patent ***not connected*** the input optical fiber 111. Petitioners' only basis for this incorrect conclusion is their misunderstanding of the antecedent basis of "the optical signals."

But even Petitioners' incomplete analysis based on the antecedent basis fails to find support in the claims. Using claim 1 as an example, the claim contains both

transmitter and receiver elements, which transmit and receive optical signals, without requiring the transmitted signals and received signals to be the same. For example, the preamble of claim 1 states the transceiver card is "for transmitting data over a first optical fiber and receiving data over a second optical fiber." There is no requirement that the "data" be the same data. The claim explicitly states that the transmitter transmits "optical signals for telecommunication as a function of the input data," and not optical signals for testing or diagnostics. With regard to the receiver, the claim states that the receiver is "optically connected to the fiber input for receiving data from the second optical fiber." Implicit in this requirement, and consistent with specification of the '327 patent, is that there are "optical signals," which carry the data, on the second optical fiber. Thus, when claim 1 speaks of measuring "an energy level of the optical signals," it does not require that the received optical signals are the same signals as those transmitted by the transmitter from the same transceiver card. Rather, they are the optical signals received via the second optical fiber. Thus, the claims themselves confirm that there is no feed-back loop of the optical fiber.

Second, Petitioners fatally make no attempt to show that a loop-back requirement is consistent with the specification of the '327 patent. This is because their interpretation is completely inconsistent with the '327 patent's specification and therefore unreasonable. The field of the invention of the '327 patent is

telecommunications, and the summary of the invention is a "transceiver card" to provide "optical data communications," not a self-testing or diagnostics card. *See* '327, 1:11-13, 2:18-20. The abstract of the '327 patent also describes the disclosure as directed to data transmission, not self-testing. Consistent with these overviews, the '327 patent's specification does not speak to any loop-back capability of the optical fiber or any related concept such as self-testing or diagnostics. For example, Fig. 1 of the '327 patent shows optical fibers 110 and 111 as being unconnected and unterminated, rather than disclosing any diagnostic looping connection.

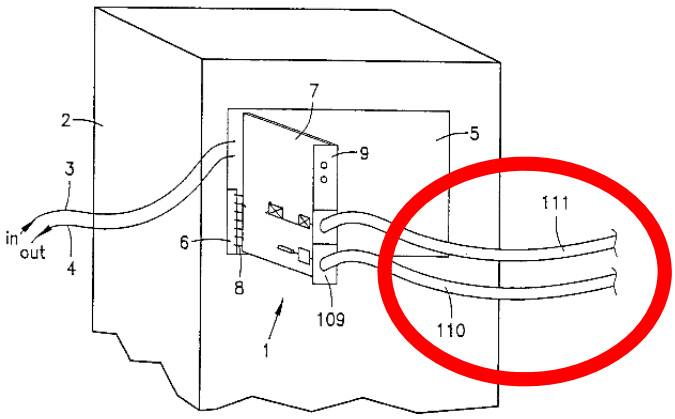


Fig. 1

Thus, Petitioners' incorrect position not only fails to encompass any disclosed embodiment, it specifically reads out each embodiment that is disclosed in the specification. *See Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1277 (Fed. Cir. 2008) ("where claims can reasonably [be] interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence on the contrary").

Other factors weigh overwhelmingly against Petitioners' proposed interpretation. For example, Petitioners have not identified any portion of the prosecution history of the '327 patent that would require loop-back. Additionally, the Petitioners have challenged patents related to the '327 patent in other IPRs.[9] Petitioners have not argued that the related patents have any claims directed to loop-back of the optical fiber for diagnostic testing, thus reinforcing that there is no such disclosure in the common specification. Finally, other petitioners have challenged the '327 patent in a subsequent IPR without suggesting that the claims require loop-back of the optical fiber. *See, e.g.*, IPR2017-02173, Paper 1 at 20-21.

Properly construed, the claims of the '327 patent do not require loop-back of the optical fiber under the broadest reasonable interpretation of the claims. Thus, the Petition is improper for attempting to construe the claims in such a manner, and should be rejected.[10]

[9] *See, e.g.*, IPR2017-01870, IPR2017-01874, IPR2017-01881.

[10] As explained below, Petitioners' challenges are fatally flawed for other reasons. The Board can and should deny institution of *inter partes* review without having to construe "the optical signals" as recited in claim 1.

B. The Proposed Combinations in Grounds 1-4 Based on Treyz Fail and Should be Denied Without Institution

1. Petitioners' Grounds 1-4 Should be Denied Because They Fail to Account for the Examiner's Consideration of Treyz During Prosecution

In Grounds 1-4, Petitioners argue that Treyz discloses an optical power monitor (which they characterize as an "energy level detector") to monitor power of an optical signal. *See*, *e.g.*, Pet., 25, 52, 56, 60, 61, 67. Further, Petitioners rely on Treyz to show using an energy level detector to compare a measured optical power to one or more ***thresholds***. Pet., 61. However, during prosecution of the '327 patent, Examiner Tran substantively considered and dismissed the arguments Petitioners now raise with respect to Treyz. Ex. 2001, 192-96.

Under 35 U.S.C. § 325(d), the Board has the discretion to reject grounds founded upon art previously considered by the examiner. Three recent decisions, designated by the Board as informative, confirm the importance of conserving Board resources and denying challenges that are repetitive or cumulative of arguments already deemed unpersuasive by the examiner.

First, in *Unified Patents, Inc. v. Berman*, IPR2016-01571 (PTAB Dec. 14, 2016) (Paper 10), the Board denied institution on an obviousness challenge where the references advanced were also used by the examiner in a rejection or were cumulative to such references. Despite the petitioner's use of the same, or substantially the same, prior art and arguments presented previously to the Office,

the petitioner failed to present any argument to distinguish the examiner's prior consideration or to provide a compelling reason why the Board should readjudicate the issue. A third challenge was permitted based on petitioner's showing that a reference was not cited during prosecution and contained features not present in the prosecution references. Next, in *Hospira, Inc. v. Genentech, Inc.*, IPR2017-00739 (PTAB July 27, 2017) (Paper 16), the Board declined to readjudicate a priority claim. Finally, in *Cultec, Inc. v. Stormtech LLC*, IPR2017-00777 (PTAB Aug. 22, 2017) (Paper 7), the Board agreed that a reference that was applied in a related application and cited in the patent-at-issue also implicated § 325(d).

Here, the examiner was well-aware of the teachings of the Treyz reference when allowing the '327 Patent to issue, as the Examiner formed and withdrew prior art rejections based on Treyz. In the non-final Office Action dated January 21, 2009, the examiner cited Treyz, column 12, lines 34-52, as disclosing the "power level detector includes a plurality of ***thresholds***." Ex. 2001, 194 (emphasis added). Treyz was also cited in the body of the final office action dated May 11, 2009. Ex. 2001, 221 ("it would have been obvious to an artisan to include the power level detector having a plurality of thresholds taught by Treyz …."). This rejection was later withdrawn. Ex. 2001, 236-39.

Applying the Board's informative decisions to this case, the Board should dismiss the Treyz Grounds because Petitioners' arguments do not acknowledge

that Treyz was well-known to the Examiner of the '327 patent. *See, e.g., Cultec Inc. v. Stormtech LLC*, IPR2017-00777, slip op. at 9-10 (PTAB Aug. 22, 2017) (Paper 7). Additionally, Petitioners make no attempt to distinguish their interpretation of Treyz from how Treyz was understood by the Examiner. Petitioners, instead, ignore what Treyz actually teaches, something the Examiner did not do.

Moreover, Petitioners have ignored the more than ninety references cited in the '327 prosecution, and make no attempt to show that the references applied in the Petition are not cumulative to the teachings in those references. As it is Petitioners' burden to demonstrate that the *inter partes* review should be instituted, these failures are fatal to the Petition, and Patent Owner respectfully requests that the Board exercise its discretion to deny institution. *Unified Patents, Inc.*, IPR2016-01571, slip op. at 12.

2. Ground 1 Must Be Denied Because Petitioners' Proposed Combination Fails to Disclose or Suggest All Features of Claim 1

Confirming that the Examiner was right to allow the '327 patent over Treyz, Petitioners' challenge based on Treyz involves layer upon layer of unsupported modifications. Specifically, Petitioners' convoluted combination against claim 1 includes: (i) taking Treyz's tap 49, optical channel monitor 47, and control unit 40 from an amplifier module 23 and arranging these elements on a separate,

undisclosed module, (ii) adding to this undisclosed module a "generic" module having a receiver, which is then replaced by (iii) Ade's (laser-less) transceiver arranged on a silicon chip, and finally (iv) adding a fiber loop-back for testing shown by Graham. Pet., 26-35. This combination is further modified as Petitioners attack the dependent claims.

Nevertheless, despite the great lengths Petitioners go to create this hindsight-driven combination, they still cannot show all elements of the challenged claims. First, all claims of the '327 patent require a "transmitter having a laser" arranged on a transceiver card, and this element is neither disclosed nor suggested by Petitioners' proposed combination of references. Second, Treyz does not disclose a combination of an energy level detector and a receiver, let alone an energy level detector optically connected between a receiver and a fiber input on the same transceiver card as required by the challenged claims. Third and finally, a POSITA faced with Treyz would not have been motivated to modify Treyz's components to create a transceiver card with each of the features as arranged in the challenged claims.

a) Petitioners' Proposed Combination of Treyz, Ade, and Graham Fails to Disclose or Suggest Including a Laser on a Transceiver Card

Petitioners' challenges based on Treyz in combination with Ade should be denied because they are fundamentally flawed. As introduced above, claim 1 is

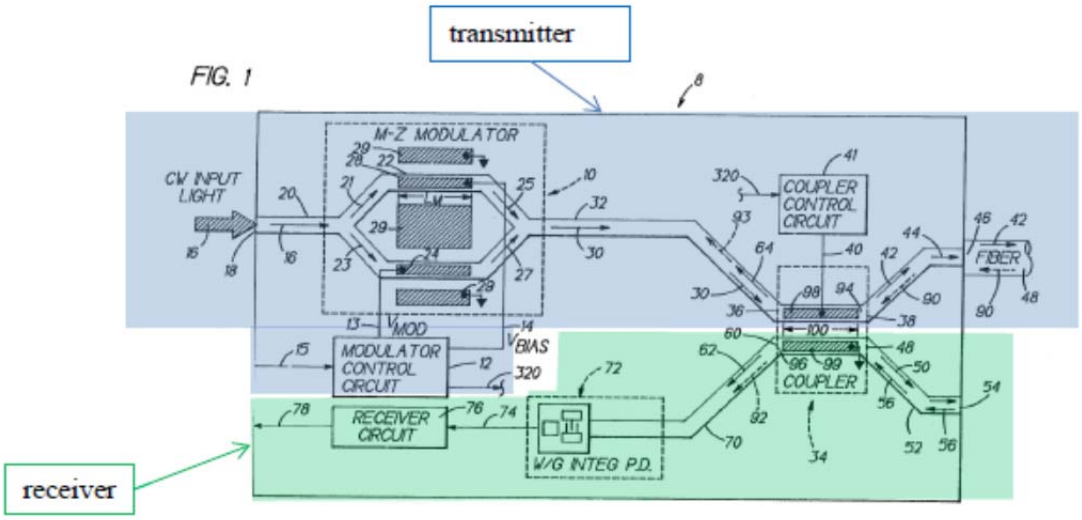
directed to a claimed "transceiver card." Further, the transceiver card must include a transmitter "having a laser" on the transceiver card. '327 patent, 6:45-49. Indeed, this feature appears in each of the '327 patent claims, either directly or through dependence from an independent claim. In Ground 1, Petitioners propose a combination of Treyz, Ade, and Graham, but gloss over the failure of these references, either alone or in combination, to disclose or suggest these features of claim 1.

In addressing claim 1,[11] Petitioners initially look to Treyz for a disclosure of cards 21 and a "rack or housing for telecommunications equipment." Pet., 35. But Petitioners admit that "Treyz does not provide structural details for the transmitters and receivers of module 23." Pet., 28. Thus, there is no dispute that Treyz fails to disclose a transceiver card comprising a transmitter "having a laser …" as required by claim 1.

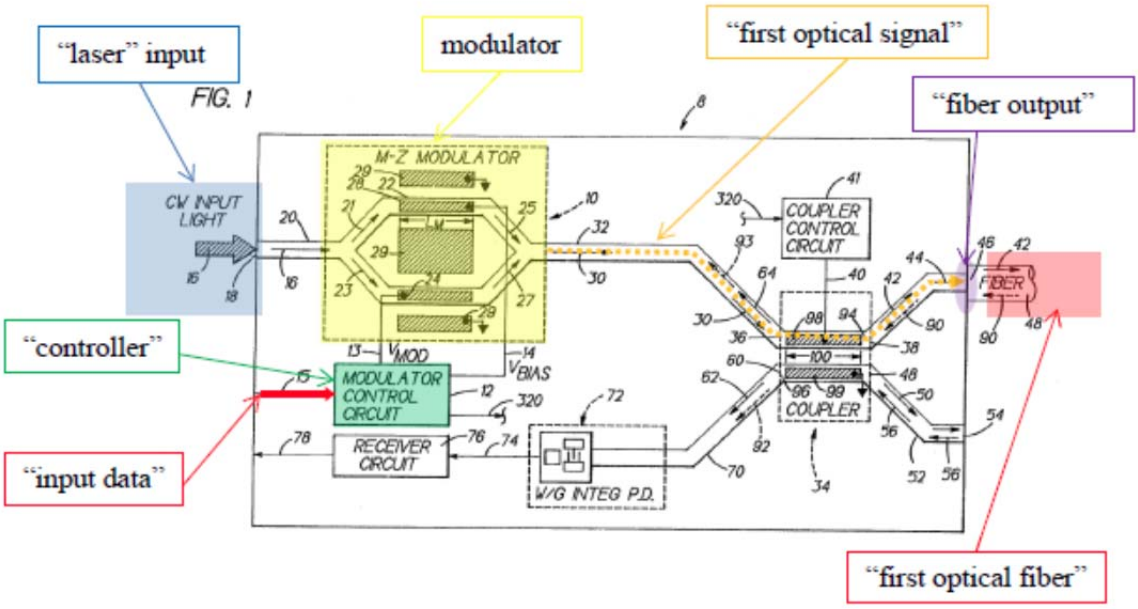
To remedy the admitted deficiencies of Treyz, Petitioners look to Ade and assert that "Ade's transmitter includes input light 16 …." Pet., 36. This statement is misleading at best since ***Ade's transmitter does not include a light source and Ade does not disclose a light source on a transceiver card***. Any disclosure of a

[11] Petitioners refer to their arguments regarding claim 1 when addressing the similar requirements of claims 14 and 25. Pet., 56-57. The challenges of claims 22 and 33 are therefore deficient for the same reasons explained in this Section.

transmitter or transceiver by Ade necessarily ***excludes*** a light source. It appears that this missing element was intentionally sidestepped by Petitioners since their annotation of Ade's Fig. 1 improperly attempts to classify the CW input light 16 from an external source as part of, rather than separate from, Ade's transmitter contrary to Ade's express disclosure:



Pet., 36 (annotating Ade's Fig. 1). As indicated above, Petitioners are suggesting that CW Input Light 16 is part of the highlighted transmitter when, in fact, Ade discloses exactly the contrary. As Petitioners acknowledge in their initial discussion of Ade, Ade clearly discloses that the light source is ***external to the transmitter***. In particular, Petitioners admit that a "laser ***inputs*** light to Ade's 'modulator 10,'" and therefore present a differently-highlighted version of Ade's Fig. 1, showing optical receiver/transmitter (transceiver) 8 with CW INPUT LIGHT 16 input to transceiver 8 (Pet., 20) (emphasis added):



Pet., 20 (annotating Ade's Fig. 1). Petitioners even label this input light as "'laser' input," *id*., recognizing that laser is external to the transceiver 8. This is consistent with Ade's express disclosure. Referring to Fig. 1, Ade discloses that the "Mach-Zehnder waveguide-modulator 10 receives continuous wave (cw) input light 16 ***from an external source***, e.g., a laser (not shown)." Ade, 4:3-5 (emphasis added).

Petitioners do not dispute that claim 1 requires a "transmitter having a laser" on the "transceiver card," but they completely fail to evaluate this element in their challenges. In particular, Petitioners argue that "it would have been obvious to incorporate Ade's transceiver into Treyz' 'optical card 21'" without acknowledging to the Board that Ades's transceiver lacks a light source. Pet., 37. Petitioners even summarize their proposed combination of elements on page 29 of the Petition, where they state that the "proposed combination therefore includes

Treyz' optical card and power monitor and Ade's receiver, transmitter, and modulator with control circuitry." Pet., 29. But Ade's transceiver fails to include a "transmitter having a laser" on the "transceiver card," and therefore even this unsupported combination would result in an implementation that fails to disclose all features of claim 1.

Moreover, Ade fails to suggest implementing a laser or light source on the same card as Ade's "transceiver" or "transmitter."[12] These defects in Ade's disclosure infect Petitioners' allegations on what Ade allegedly teaches or suggests to a POSITA. Ade instructs that the transmitter receives light from an ***external light source***. Ade fails to teach or suggest modifying a transmitter to include a light source on the same transceiver card as the transmitter.

In summary, neither Treyz nor Ade discloses or suggests including a "transmitter having a laser" and a receiver all on a transceiver card. Given this lack of disclosure, a POSITA faced with Treyz and Ade would not have been motivated to modify Treyz and Ade in a manner that would disclose all features of claim 1. And because Petitioners failed to acknowledge this defect in Ade's teaching, there is no alternative obviousness theory before the Board. Instead, Petitioners present a defective combination that fails to render claim 1 obvious.

[12] Indeed, Petitioners have not even attempted to make this argument, which is therefore not properly before the Board for consideration.

Petitioners cannot prevail on this theory, and this defect taints each of Petitioners' Grounds 1-4 based on Treyz, Ade, and the other asserted references.

b) The Treyz Reference Also Fails to Disclose a Transceiver Card or a Module Having an Energy Level Detector and Receiver

Petitioners also illogically attempt to modify Treyz in order to place a receiver module and Treyz's "optical channel monitor" on the same transceiver card. But Treyz fails to disclose such an arrangement, and Petitioners' modification of Treyz fails to take into account Treyz's full disclosure regarding the optical channel monitor. Specifically, Treyz teaches using an optical channel monitor in connection with an optical amplifier, but neither discloses nor suggests arranging an optical channel monitor and a receiver on a transceiver card. Indeed, the very purpose of an optical channel monitor in Treyz is tied to its use with an optical amplifier, gain stage, or dynamic filter, as will be described below. Nothing in Treyz, the Petition, or Dr. Blumenthal's declaration explains how that use would have applied to a receiver.

i. Treyz Discloses an Optical Channel Monitor to be Used in an Optical Amplifier or with a Gain Stage or Dynamic Filter, Not with a Receiver

Treyz discloses an optical channel monitor 47 in optical network equipment module 23, shown in Fig. 3, which is described as "an ***optical amplifier module*** that may be ***used in an optical amplifier 18***." Treyz, 5:19-22 (emphasis added).

Treyz then consistently discloses that the optical channel monitor 47's use is tied to optical amplification or dynamic filtering. For example, the optical channel monitor 47 measures the spectrum of input and output optical signals of the optical amplifier 18. Treyz, 7:29-47. Specifically, along with a control unit 40, the optical channel monitor 47 measures the overall optical gain or gain spectrum produced by the amplifier gain stages 30 and dynamic filter 38 of the optical amplifier module 23 shown in Fig. 3. Treyz, 7:53-55. As such, the optical channel monitor 47, the control unit 40 and the dynamic filter 38 work together to control the gain spectrum and modify the spectral shape of a gain spectrum amplifier 18. Treyz, 13:3-50. However, Treyz fails to disclose any need, advantage, or reason that a POSITA would have combined the optical channel monitor 47 on a common transceiver card with a receiver, which is not disclosed as including any optical amplification or dynamic filtering.

ii. Treyz's Optical Communications Network Includes a Receiver at an Endpoint of a Communications Link, and Separate from an Optical Channel Monitor of an Optical Amplifier Module

Treyz generally discloses a "fiber-optic communications link 10 in the optical communications network" as shown below in Fig. 1. Treyz, 3:48-50. The fiber-optic communications link 10 includes network equipment such as a transmitter 12 and a receiver 14 at the endpoints of link 10, and arranged separately from optical amplifiers 18 and optical network equipment 20. Treyz, Fig. 1, 4:20-

22. As Treyz explains, the optical amplifiers 18 "may be used to amplify optical signals on link 10." Treyz, 4:10-11.

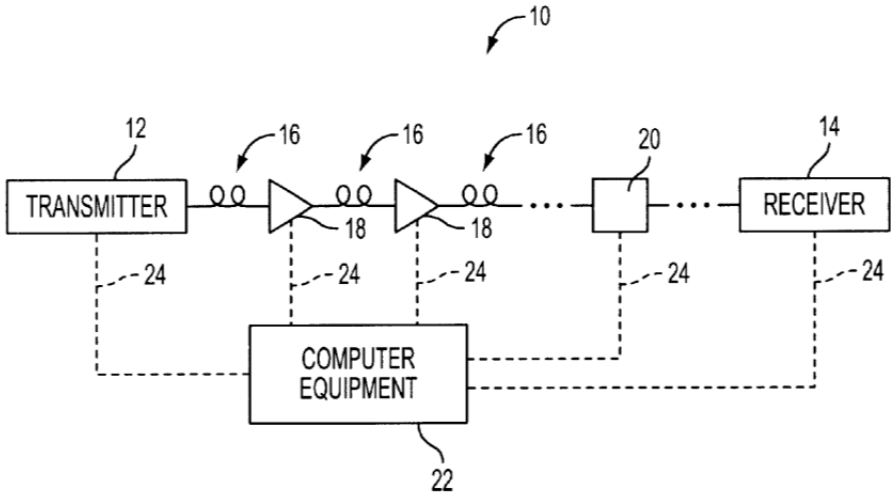


FIG. 1

The fiber-optic communications link 10 of Fig. 1 also includes an "[i]llustrative optical network equipment 20." Treyz, 4:26-46. The optical network equipment 20 can include an optical network equipment module 23, such as the optical amplifier module 23 of Fig. 3, introduced above and described in more detail below.

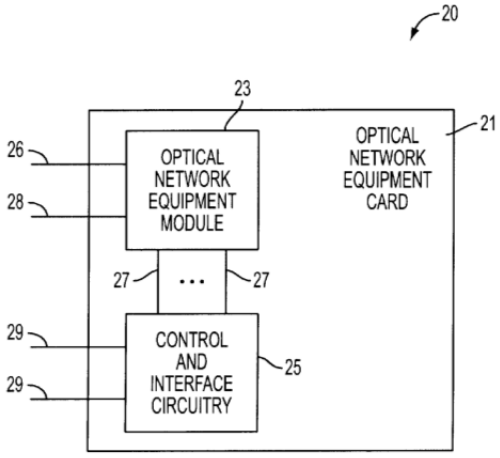


FIG. 2

Consistent with Treyz's discussion of optical amplifiers 18, Treyz discloses that "if optical network equipment 20 represents all or part of an optical amplifier, output signals may be provided at output 28 that are amplified versions of the optical signals provided at input 26." Treyz, 4:61-64.

Separate from optical network equipment module 23 on equipment 20 is the control and interface circuitry 25. Treyz, Fig. 2.

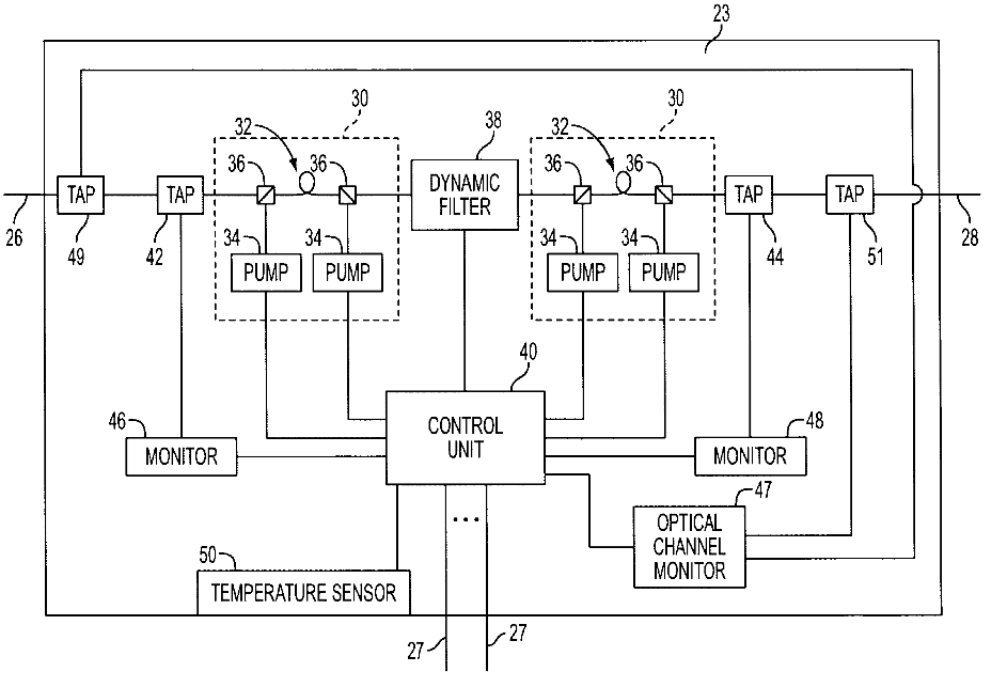


FIG. 3

Fig. 3 of Treyz is an expanded view of the optical network equipment module 23 of Figure 2, disclosed as the "***optical amplifier module*** that may be ***used in an optical amplifier 18***." Treyz, 5:19-22 (emphasis added). In this disclosure, Treyz specifically notes that other "illustrative modules 23" could include "optical channel monitor modules, [and] fil[t]er modules with optical channel monitoring capabilities." Treyz, 5:22-24. This second type of module, a filter module with optical channel monitoring capabilities is expressly described as an optical channel monitor 47 that is integrated with a dynamic filter element 98. Treyz, 9:14-15. But while Treyz also lists "transmitter modules" and "receiver

modules" among the illustrative modules, Treyz specifically ***fails to disclose*** that these modules could include "optical channel monitoring capabilities." The impact of Treyz's disclosure is clear; Treyz plainly states which modules could include optical channel monitoring. These modules ***do not include*** any "transmitter modules" or "receiver modules."

Returning to Fig. 3, Treyz explains that two amplifier stages 30 are represented within the optical amplifier module 23 as boxes with doted lines. Treyz, 5:32. A dynamic filter 38 as well as taps 42, 44 and corresponding monitors 46 and 48 are also part of the amplifier module 23. Treyz, 5:60, 6:59-64. The optical channel monitor 47 of the amplifier module 23 measures the spectrum of input and output optical signals of the optical amplifier 18. Treyz, 7:29-47. As noted above, along with control unit 40, the optical channel monitor 47 measures the overall optical gain or gain spectrum produced by the amplifier gain stages 30 and dynamic filter 38 between the tap 49 to the tap 51. Treyz, 7:53-55. As such, the optical channel monitor 47, the control unit 40 and the dynamic filter 38 work together as part of optical amplifier module 23 to control the gain spectrum and modify the spectral shape of the gain spectrum amplifier 18. Treyz, 13:3-50.

Therefore, considered in full, Treyz's disclosure expressly describes the purpose of an optical channel monitor 47 used in combination with a control unit 40 and a dynamic filter 38 or amplifier stages 30. But Treyz notably fails to

disclose the optical channel monitor 47 working together with a receiver module in any way. With this background, it is clear that a POSITA would not have been motivated to combine the optical channel monitor 47 and a receiver on a common module or card. Petitioners' assertions to the contrary are founded upon contorted characterizations of Treyz's disclosure.

iii. A POSITA Would Not Have Used Treyz's Optical Channel Monitor without an Optical Amplifier, Gain Stage, or Filter

Petitioners make numerous incorrect statements about Treyz's disclosure in an unsuccessful attempt to support their relocation of the optical channel monitor 47 from amplifier module 23 to a receiver at an endpoint of the network link. Once these statements are corrected, there is no foundation remaining for Petitioners' theory.

In a first example, Petitioners state that "Treyz also discloses that various pieces of optical equipment can be combined into a single 'optical equipment module 23' on card 21." Pet., 27. In support for this statement, they cite to Treyz, 6:33-43, but this excerpt of Treyz does not support their assertion. Here, Treyz discloses that "various additional components may be positioned at locations along the main fiber path through a module 23." Treyz, 6:33-43. This statement simply means that additional modules 23 can be arranged along link 10 as shown in Fig. 1. Stemming from their erroneous characterization of Treyz, Petitioners conclude that

"Treyz is therefore expansive and flexible in its description of equipment that might be included in an optical card …." Pet., 27-28. But as shown above, Treyz in fact does not support the overbroad combination of "various pieces of optical equipment … into a single 'optical equipment module 23' on card 21," as Petitioners incorrectly contend. Therefore, Petitioners' fundamental theory is flawed.

Petitioners also misread Treyz's disclosure of "system architectures." Pet., 27. There, Petitioners allege that in a "point-to-point link" or "ring" architecture, "each node in the system would both transmit and receive optical signals, and thus include transceiver functionality." Pet., 27. This suggests that every "node" must include both a transmitter and receiver as a matter of inherency, but Treyz itself disproves this theory. For example, of the components arranged on fiber-optic communications link 10, only one transmitter 12 and one receiver 14 are disclosed at the respective endpoints of the link 10. Treyz does not disclose a transmitter and receiver at each node. Treyz, Fig. 1. Treyz specifically discloses no transmitter or receiver in the optical network equipment 20, and Petitioners' overreaching cannot justify what is clearly a hindsight-driven theory of obviousness. Moreover, Treyz's disclosure of system architectures does not support Petitioners' contention that a module having an optical channel monitor would also have a receiver.

Petitioners and Blumenthal also misinterpret Treyz's discussion regarding the omission of a gain stage 30 from amplifier 23. Pet., 10. The Petition cites to Treyz to make an incorrect assertion, one that is fundamental to Petitioners' argument and without which it fails. Petitioners contend that "Treyz states that the energy level detector may also be used in modules without a 'gain stage,' ***including a receiver***." Pet., 10 (citing Treyz, 7:14-21, 7:47-59, 5:19-31) (emphasis added). This is wrong. First and foremost, Treyz does not state that a receiver module could include an optical channel monitor 47. Rather, Treyz discloses that "module 23 without a gain stage may be provided with an optical channel monitor." Treyz, 7:15-17. Treyz then discloses that this type of module 23 with an optical channel monitor but without a gain stage "may be optically coupled to a link 10 or an amplifier 18." Treyz, 7:17-18. As noted above, link 10 shown in Fig. 1 includes amplifiers 18. Thus, when considering Treyz in full, this discussion once again confirms that the optical channel monitor 47 is tied to the use of an amplifier 18, gain stage 30, or dynamic filter 98. Further, as discussed above, Treyz plainly states which modules could include "optical channel monitoring capabilities," and does not include receiver modules among that list. Treyz, 5:22-24.

Second, Petitioners' logical is faulty. The fact that an optical channel monitor may be used in a module without a gain stage 30 does not *ipso facto* teach

adding a receiver (or any other component) to a module that has an optical channel monitor 47. The obviousness analysis requires more than a possibility; just because a POSITA could have combined the references does not mean that a POSITA ***would*** have combined them. *Personal Web Technologies, LLC v. Apple, Inc*., 848 F.3d 987, 993–94 (Fed. Cir. 2017). Removing the gain stage 30 from the amplifier module 23 as shown in Fig. 3 (7:14-21) does not teach combining the optical channel monitor 47 with a receiver, nor does it disclose that a receiver should be added to optical network equipment module 23 having other components.

Petitioners refer to Fig. 6 and incorrectly allege that optical channel monitor 47 is a component of Treyz's "control circuitry" which they claim may be coupled to a receiver. Pet., 8 (*citing* Treyz, 7:47-59, 5:19-31). First, optical channel monitor 47 is not a component of "control circuitry." Fig. 6, reproduced below, shows "a schematic diagram of control circuitry associated with an illustrative optical network equipment module." Treyz, 2:50-52.

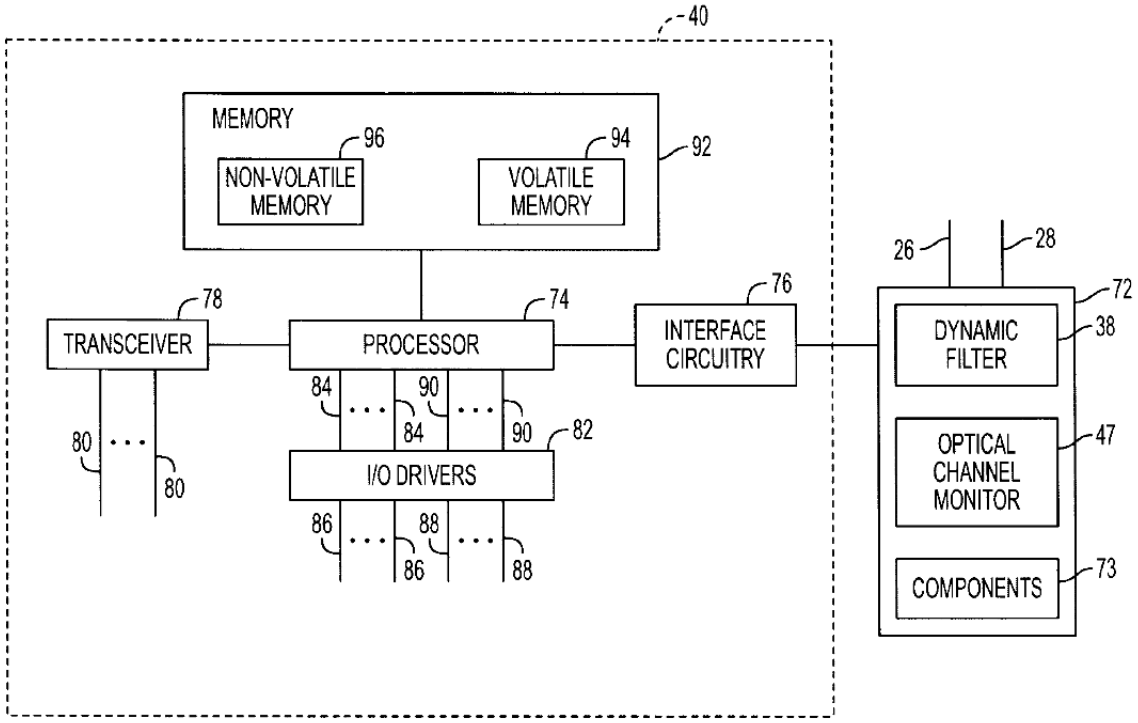


FIG. 6

Second, Treyz is clear that the "control circuitry" is in control unit 40: "[c]ontrol unit 40 may be based on any suitable control circuitry …." Treyz, 6:44-45. The optical channel monitor 47 and the dynamic filter 38 are external to control unit 40 and are not part of any control circuitry. Thus, Petitioners are simply wrong in asserting that optical channel monitor is part of any "control circuitry." Pet., 8 (citing Treyz, 7:47-59, 5:19-31).

Third, the optical channel monitor 47 is not coupled to a variety of optical components. Specifically, the optical channel monitor 47 is electrically connected to control unit 40 within amplifier module 23. Treyz, Fig. 3. In addition, the

optical channel monitor 47 receives inputs from tap 49 and tap 51. Treyz, Fig. 3. Other than these connections, no alleged "coupling" of the optical channel monitor 47 to a variety of optical components is shown or described.

Fourth, the optical channel monitor 47 is not optically connected to a receiver, and Treyz's 7:47-59 and 5:19-31 do not disclose or suggest optically connecting an optical channel monitor to a receiver. Petitioners have the burden of proof, and have not explained otherwise. Thus, the Board should not be misled by Petitioners' incorrect statements, which are contradicted by Treyz's disclosure, including Figure 6.

Dr. Blumenthal does not bring clarity to the Petitioners' theories. He also incorrectly states that "Figure 6 shows that the optical channel monitor is associated with the control circuitry, which can be used with any module, not just an amplifier." Blumenthal, ¶50. As explained above, the optical channel monitor 47 is not part of the control circuitry shown in control unit 40, and Treyz does not disclose that this control circuitry can be used with any module, including a receiver. In summary, Petitioners and Dr. Blumenthal have no basis for their unsupported and inaccurate assertions.

Finally, Petitioners are further incorrect in interpreting Treyz's Fig. 3 as including optical channel monitor 47 "coupled to a generic 'equipment module.'" Pet., 9. Petitioners continue this reasoning by characterizing Fig. 3 as showing "the 'equipment module' is an optical amplifier." Pet., 9; Pet., 10 (annotating Treyz, Fig. 3).

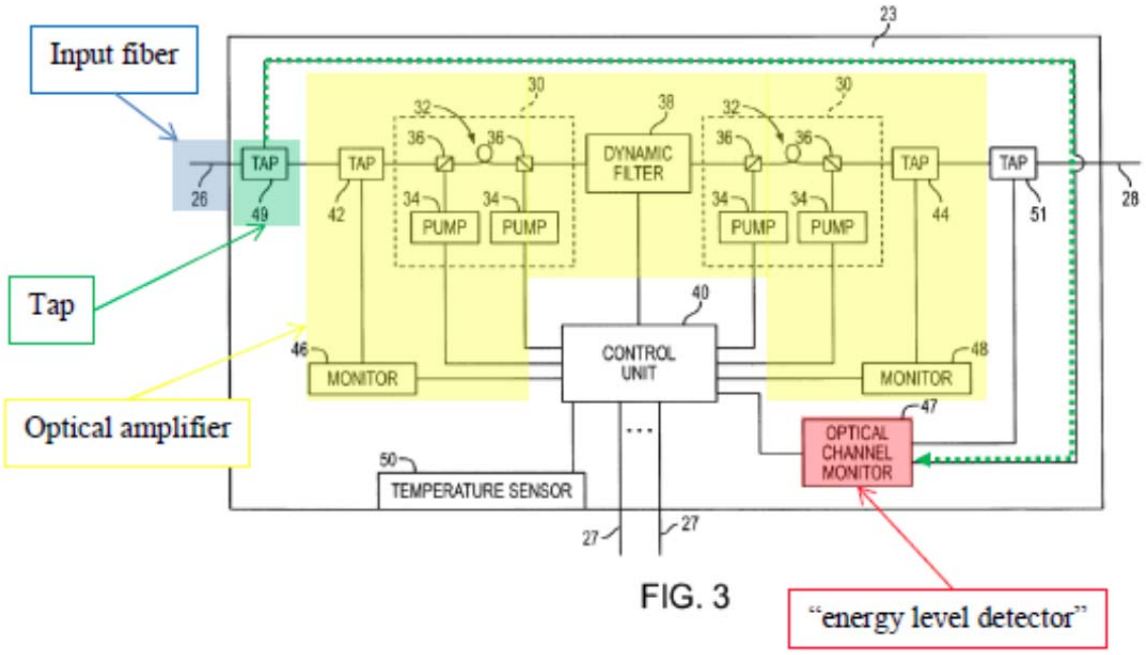
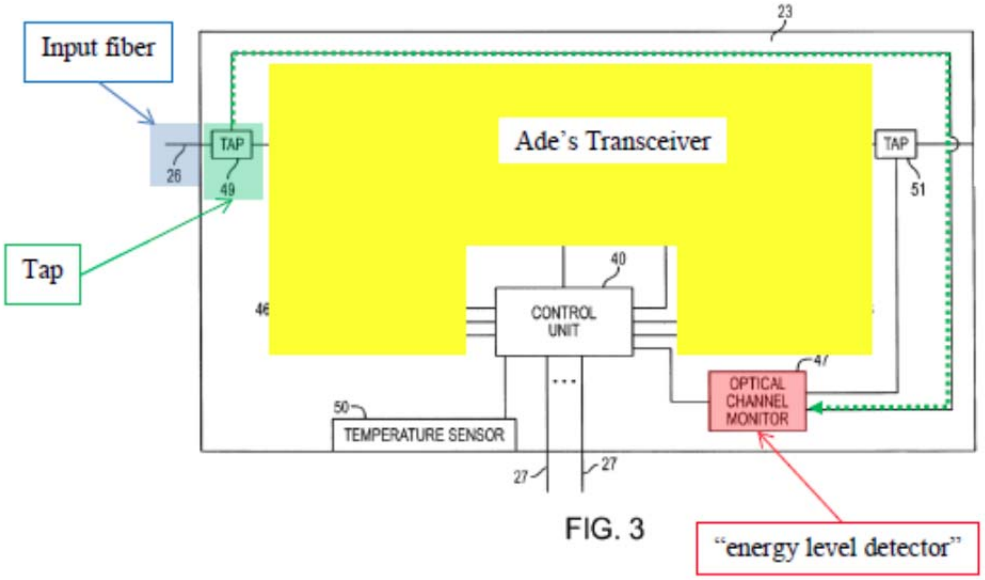


FIG. 3

Petitioners have it backwards. Once again, Treyz directly contradicts Petitioner's characterization of the optical amplifier ***being*** an equipment module. Rather, Treyz discloses that Fig. 3 is an expanded view of the optical network equipment module 23 of Fig. 2, and is "an ***optical amplifier module*** that may be ***used in an optical amplifier*** 18." Treyz, 5:19-22 (emphasis added). In other words, Fig. 3 shows amplifier module 23 that is used ***in*** an optical amplifier 18. It

is illogical and wrong for the Petitioners to contend that an optical amplifier is contained within and is a sub-component of the amplifier module 23.

The impact of Petitioners' mistake here is critical because their misread of Treyz establishes the false foundation for their combination of Treyz and Ade as shown below:



Pet., 29 (*annotating* Treyz's Fig. 3). Nothing in Treyz teaches the characterization of nearly all module components (30, 38, 42, 44, 46, 48, 50) as their own module-on-a-module, and nothing in Treyz teaches placing a transceiver into the middle of amplifier module 23 along with tap 49, tap 51, optical channel monitor 47, temperature sensor 50, and control unit 40. This theory is a fabrication founded upon multiple misstatements and contortions of Treyz's actual disclosure. Considered accurately and fully, Treyz fails to support Petitioners' theory of obviousness.

c) Petitioners' Proposed Combination of Treyz, Ade, and Graham Fails to Disclose or Suggest an Energy Level Detector Optically Connected Between the Receiver and the Fiber Input

As introduced above, Petitioners rely on the primary reference Treyz to disclose the combination of an energy level detector and receiver as recited in independent claim 1. Pet., 39. As explained in detail, Treyz fails to disclose or suggest the combination of an energy level detector and receiver, but claim 1 requires more. Specifically, claim 1 requires the energy level detector to be optically connected between the receiver and fiber input. Treyz necessarily fails to disclose this feature of claim 1 as well, and Petitioners' theory, as well as its characterization of Treyz, does not correspond with the actual disclosure of Treyz.

Specifically, the Petition incorrectly states that "Treyz discloses an energy level detector incorporated onto an optical card and located between an input fiber and an optical equipment module." Pet., 7 (citing Blumenthal, ¶48). Since the tap 49 and optical channel monitor 47 is within the optical network equipment module 23, it cannot be located between an input fiber 26 and an optical network equipment module 23 as alleged. Further, as shown in Figs. 2 and 3, the input fiber 26 is shown connected directly to the optical network equipment module 23, without any energy level detector in between. Treyz, Figs. 2-3. Thus, these claim elements are also not disclosed or taught by Treyz or any other art of record.

For all the reasons set forth above, Ground 1 fails because Petitioners have

failed to show that all elements of claims 1, 6-9, 11, and 12 are present or even suggested in the proposed combination of Treyz, Ade, and Graham. As such, Petitioners' challenges to claim 1, and to all challenged dependent claims 6-9, 11, and 12 based on Treyz, Ade, and Graham must fail.

3. Ground 1 Fails as Petitioners Do Not Set Forth a Proper Combination of Treyz and the Secondary References

Ground 1 also fails as Petitioners have failed to establish a proper modification of Treyz. Petitioners, instead, have used the invention of the '327 patent as a roadmap for the combination, without any showing of a reasonable expectation of success for the proposed modifications.

"An obviousness determination requires finding both 'that a skilled artisan would have been motivated to combine the teachings of the prior art . . . and that the skilled artisan would have had a reasonable expectation of success in doing so.'" *In re Stepan Co.*, 868 F.3d 1342, 1345-46 (Fed. Cir. 2017) (quoting *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016)). "To have a reasonable expectation of success, one must be motivated to do more than merely to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result." *Id*. at 1347 (quotation and citation omitted).

Petitioners admit that Treyz does not provide "structural details" relating to certain claimed features, including implementation on a single optical transceiver

card of an energy level detector, receiver and transmitter. *See, e.g,* Pet., 28, 51. Petitioners then attempt to modify Treyz to fill in the missing details. But in so doing, Petitioners are performing the modifications with knowledge of the invention, and they only provide conclusory statements of motivation for the proposed modifications. For example, "a POSITA would understand that, based on the disclosures associated with Figures 2, 3 and 6, Treyz' optical channel monitor would be coupled to a generic "module 23" (such as a transmitter or receiver) . . . " Pet., 10. Petitioners' modification of Treyz based on Ade takes only the parts of Ade that Petitioners find desirable, and ignores the remainder of the reference. Pet., 28-31, 51-53. In particular, Petitioners completely ignore the fact that Ade fails to disclose a transmitter having a laser, as required in every claim of the '327 patent. Petitioners have therefore committed the "impermissible" act of picking and choosing "only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests … ." *Bausch & Lomb Inc. v. Barnes-Hind Inc.*, 796 F.2d 443, 448 (Fed. Cir. 1986) (citing *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965); *In re Mercier*, 515 F.2d 1161, 1165-66 (C.C.P.A. 1975)).

Further, the lack of details in Treyz is not an advantage in proposing a combination of references. When addressing a broad disclosure in an obviousness challenge, it remains the duty of the challenger to show that a POSITA would have

had a reasonable expectation of success to arrive at a successful result. *In re Stepan Co.*, 868 F.3d at 1345-1347. Yet Petitioners and their technical declarant have not even addressed this requirement. Thus, there is no showing that the proposed combination would have had a reasonable expectation of success.

Accordingly, Ground 1 must fail. Because Grounds 2-4 also rely upon the combination of Ground 1, Grounds 1-4 against claims 1-12, 22, and 33 uniformly fail.

4. Ground 2 Fails as Petitioners' Proposed Combination of Treyz, Ade, Graham, and Ikeda Fails to Disclose or Suggest the Elements Required by Claim 2

As Petitioners acknowledge, the combination based on Treyz fails to disclose the requirement in claim 2 that "the energy level detector includes an OR gate." However, claim 2 depends from claim 1, and Ground 1 against claim 1 fails for the reasons explained above. In Ground 2, Petitioners do not rely on Ikeda to remedy the shortcomings identified above with respect to claim 1. Pet., 48-50. Because claim 2 depends from claim 1, and necessarily includes all elements of claim 1, Ground 2 fails for the same reasons as Ground 1, and must be denied without institution.

In challenging claim 2, Petitioners point to Ikeda's OR circuit 625 as allegedly disclosing an OR gate, though Ikeda never refers to OR circuit 625 as being or including an OR gate. In effect, Petitioners have reverted to an inherency-

based argument regarding Ikeda's OR circuit 625, but have failed to set forth the evidence necessary to establish that an OR gate must ***necessarily*** perform an OR operation or must necessarily be part of an OR circuit 625. This is because for a theory of inherency to succeed, it is not enough that the missing disclosure ***could be*** present. Rather, the missing disclosure must ***necessarily*** be present in the cited reference. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." M.P.E.P. § 2112 (IV) *quoting In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993); *see also MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999). Inherency may not be established by probabilities or possibilities. *In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981). Petitioners have failed to set forth such a case of obviousness.

For at least these reasons, in addition to the fatal defects included in Petitioners' challenge of independent claim 1, Petitioners' challenge of dependent claim 2 is also fatally flawed.

5. Ground 3 Fails to Establish Unpatentability of Dependent Claims

a) Ground 3 Fails as Petitioners Do Not Set Forth Any Challenge to Independent Claims 14 and 25

Ground 3 indicates that claims 3, 4, 10, 22, and 33 are being challenged. However, claims 22 and 33 are dependent claims that depend from independent claims 14 and 25, respectively. This proceeding contains no challenges directed against claims 14 and 25. Thus, at best, Petitioners have requested institution of a proceeding where a result in Petitioners' favor would be inconsistent. If an independent claim is not obvious, then its narrower dependent claims would also not be obvious. Likewise, a "broader independent claim cannot be nonobvious where a dependent claim stemming from that independent claim is invalid for obviousness." *See Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1344 (Fed. Cir. 2009) (ordering new trial due to an inconsistent verdict). Accordingly, Petitioners' challenges to claims 22 and 33 are incomplete. The Board should exercise its discretion and decline to institute the requested challenges to claims 22 and 33.

b) Ground 3 Also Fails as the Proposed Combination of Treyz, Ade, Graham, and Hooijmans Fails to Disclose the Elements of Claims 3, 4, 10, 22, and 33

In challenging claims 3, 4, 10, 22, and 33, Petitioners attempt to rely on Hooijmans for a teaching of phase modulation. Pet., 50-53. Petitioners do not rely on Hooijmans to satisfy the missing elements in claim 1 (or claims 14 and 25) or to

provide the missing motivation as described in Section IV.B.3 above. Accordingly, Ground 3 fails for the same reasons as Ground 1, and Petitioners' challenges to claim 1, and to its dependent claims 3, 4, and 10, fail.

In addition, Petitioners fail to credibly support their challenge of claim 10. Claim 10 requires that "the plurality of thresholds [of claim 1] indicate a drop in amplitude of a phase-modulated signal." In challenging this claim, Petitioners contend that "the power of an optical signal depends on the amplitude of the optical signal, [and so] a 'drop in amplitude' is also a 'drop in optical power.'" Pet., 55 (*citing* Blumenthal, ¶ 251). But neither Petitioners nor Dr. Blumenthal provide any analysis or evidence to support their facially insufficient assertion that power depends on amplitude. In particular, Blumenthal provides no technical explanation comparing amplitude and power. *See, e.g.*, Blumenthal, ¶ 251. This testimony, and the resulting conclusion, should be deemed unpersuasive. 37 C.F.R. § 42.65(a).

Additionally, Petitioners and Blumenthal look solely to P_{LOW} for claim 10. But Petitioners make no effort to explain how P_{LOW} could be interpreted to disclose "a plurality of thresholds" as required by both claims 1 and 10. Blumenthal is also silent on this point. Ex. 1003, ¶251.

Petitioners' challenge to dependent claims 22 and 33 also fail for the reasons stated above. Pet., 56-57. In particular, Petitioners' reliance on the channel-based

signals P_{HIGH} and P_{LOW} fail to disclose or suggest that "the plurality of thresholds bound an acceptable energy range for the received light," as recited in claims 22 and 33. Pet., 57.

Accordingly, Ground 3 fails and should be denied without institution.

6. Ground 4 Fails as Petitioners Have Not Shown That Kobayashi Discloses the Claimed Features

In Ground 4, Petitioners rely on Kobayashi in an attempt to satisfy the requirement in claim 5 for "a photodiode and a [linear] or logarithmic amplifier scaling an output of the photodiode." However, Petitioners do not rely on Kobayashi to satisfy the missing elements in claim 1 or to provide the missing motivation as described in Section IV.B.3 above. Accordingly, Ground 4 fails for the same reasons as Ground 1, and Petitioners' challenge of dependent claim 5 fails.

Ground 4 includes additional defects. Specifically, Petitioners' inconsistent discussions of Kobayashi do not include a cogent explanation regarding how Petitioners contend the "scaling" requirement of the claims is allegedly disclosed by Kobayashi. Petitioners introduce their challenge by arguing that "Kobayashi disclosed an improved transimpedance amplifier that scales a detected current to generate a voltage that is linearly proportional to the power of a received optical signal, even at high powers." Pet., 59. But the Petitioners then look to current mirror 110, which is a separate module from transimpedance amplifier 102, and

argue that current mirror 110 "linearly scales the amplified current to generate a voltage or current that corresponds to the input power." Pet., 60 (*citing* Kobayashi, 4:58-5:18). But Petitioners do not assert (and Kobayashi does not disclose) current mirror 110 to be a "linear or logarithmic amplifier." Further, Petitioners have not identified the alleged "amplified current" they are pointing to in this sentence, or how their characterization of current mirror 110 could be interpreted to disclose "a linear or logarithmic amplifier scaling an output of the photodiode" as required by claim 5.

Accordingly, the Ground 4 challenge to claim 5 includes no basis by which the Board could conclude that Petitioners have met their burden of establishing a likelihood of unpatentability. Claim 5 has not been shown to be unpatentable for these reasons as well.

C. The Proposed Combinations in Grounds 5-8 Based on Roberts '840 Fail and Should be Denied Without Institution

1. Ground 5 Fails as Petitioners' Proposed Combination Fails to Disclose All Features of Claim 1

a) Petitioners' Proposed Combination of Roberts '840, Ade, and Graham Fails to Disclose or Suggest a Transmitter Including a Laser on a Transceiver Card

As introduced above, claim 1 requires, *inter alia*, a transceiver card comprising a transmitter "having a laser." '327 patent, 6:45-49. In proposing a combination of Roberts '840 and Ade, Petitioners fail to recognize that these references, either alone or in combination, fail to disclose or suggest these features.

Just as Petitioners initially looked to Treyz in Ground 1, Petitioners look first to Roberts '840 and concede that "Roberts '840 does not … describe in detail the structure of 'transmitter 2' or 'receiver 4.'" Pet., 61. Petitioners then look to Ade and argue that "Ade discloses an optical transceiver that includes both a transmitter and a receiver." Pet., 61. Further, Petitioners once again argue that "Ade states that it is advantageous to combine a transmitter, a receiver, and a modulator with associated control circuitry onto a single chip." *Id*. (*citing* Ade, 1:64-67).

But repeating their earlier error, Petitioners fail to recognize that Ade's transmitter does not include a light source. Petitioners once again rely on the same illustration of Ade's Fig. 1 that they created to gloss over Ade's receipt of the CW input light ***via an external source***. Pet., 61; *see also* Section IV.B.2.a above. Accordingly, contrary to Petitioners' assertion, even the unsupported combination of Roberts '840, Ade, and Graham fails to disclose including a transmitter "having a laser" and a receiver all on a single transceiver card. Further, the disclosure of Ade would not have caused a POSITA, faced with Roberts '840, to implement a transmitter "having a laser" and a receiver all on a "transceiver card," as recited in claim 1. Accordingly, Ground 5 fails.

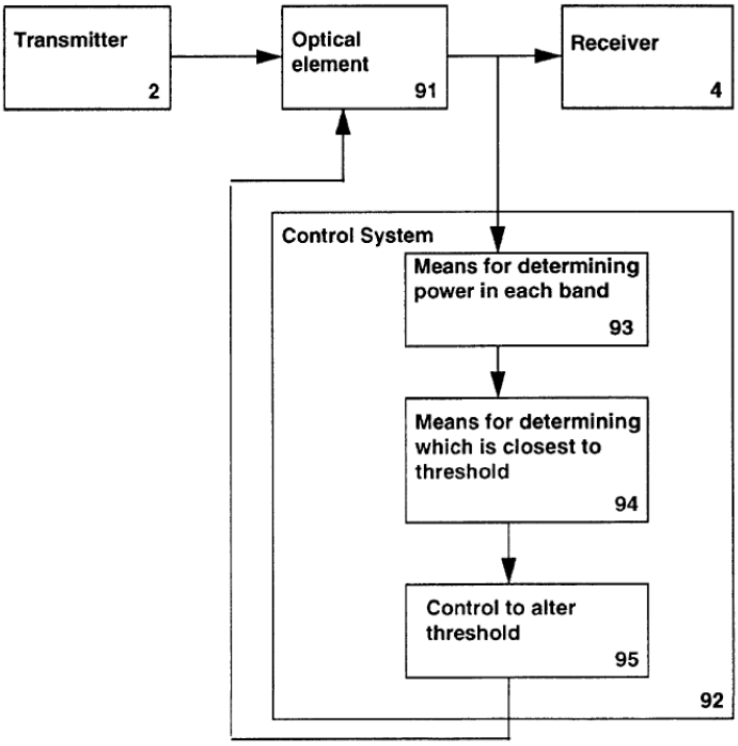
b) Petitioners' Proposed Combination of Roberts '840, Ade, and Graham Fails to Disclose or Suggest Including an Energy Level Detector on a Transceiver Card

As introduced above, claim 1 also requires, *inter alia*, a transceiver card comprising "an energy level detector optically connected between the receiver and the fiber input…." '327 patent, 6:45-63. In proposing a combination of Roberts '840 and Ade, Petitioners assert that Roberts '840 discloses an "'energy level detector' that compares a measured optical power to various thresholds to ensure that the optical power for each channel is within a desired range." Pet., 60. Petitioners then assert that "Roberts '840 discloses that power may be measured … at a receiver card." Pet., 60. But this statement wildly mischaracterizes the reference's teachings. Roberts '840 fails to disclose a receiver card, fails to disclose arranging the "control system 5" (which Petitioners contend is an "energy level detector") at a receiver, and certainly fails to disclose arranging the "control system 5" on the same transceiver card as the other receiver elements.

Petitioners attempt to address these missing elements of the combination by pointing to Roberts '840's disclosure that "power levels could be measured at a remote location such as the receiver." Pet., 60-61. But the conclusions that Petitioners draw from this statement overreach considerably. First, even if power levels could be measured at a receiver, Roberts '840 does not disclose arranging the "control system 5" in the receiver. Rather, Roberts '840 consistently arranges

control system 5/92/102 separately from the receiver 4. *See* Roberts '840, Figs. 1, 7, 9, 10. In Fig. 9 for example, Roberts '840 portrays the signal branching off the main path between optical element 91 and receiver 4, and traveling to control system 92.

Fig 9



There is no clear or even vague requirement in Roberts '840 that the control system be in the receiver to measure levels at the receiver. To the contrary, Roberts '840 consistently discloses separate arrangements. *See* Roberts '840, Figs. 1, 7, 9, 10.

Second, as noted above, Roberts '840 fails to disclose a "receiver card," as

Petitioners openly admit when they state that Roberts '840 "does not, however, describe in detail the structure of 'transmitter 2' or 'receiver 4.'" Pet., 61. It is therefore disingenuous to assert, as Petitioners have, that "Roberts '840 discloses that power may be measured … at a receiver card." Pet., 60. Roberts '840 discloses no such thing.

Third, even if power levels could be measured at a receiver, and even if a receiver were arranged on a card, Roberts '840 does not disclose or suggest arranging the "control system 5" on the same transceiver card. This is clearly a hindsight-based assertion of the Petitioners without foundation in the asserted references.

This is not a case of Patent Owner attacking the references individually. Rather, this is a case of Petitioners failing to acknowledge glaring deficiencies in the asserted reference disclosures, and failing to present any argument that would even attempt to shore up these deficiencies. Indeed, even under Petitioners' unsupported combination of Roberts '840 and Ade, arranging a (laser-less) transmitter and receiver on the same transceiver card does not disclose or suggest arranging a separate "control system" on that same transceiver card. Petitioners have no basis to assert the contrary, and even their summary of the combination fails to address Roberts '840's control system. There, Petitioners state:

> POSITA would have recognized that Roberts '840's

> optical network would benefit from inclusion of Ade's transceiver. Ex. 1003, ¶ 88. For example, implementing transmitters and receivers on the same card (rather than on separate cards) would reduce the total number of cards in a communications system, thereby reducing the cost and complexity of the system. *Id.*

Pet., 62. This analysis does not address any reason why a POSITA, faced with Roberts '840 and Ade, would have been motivated to arrange Roberts '840's "control system" on the same alleged transceiver card with a transmitter and receiver. The references are silent on any such reason, and the record is equally silent.

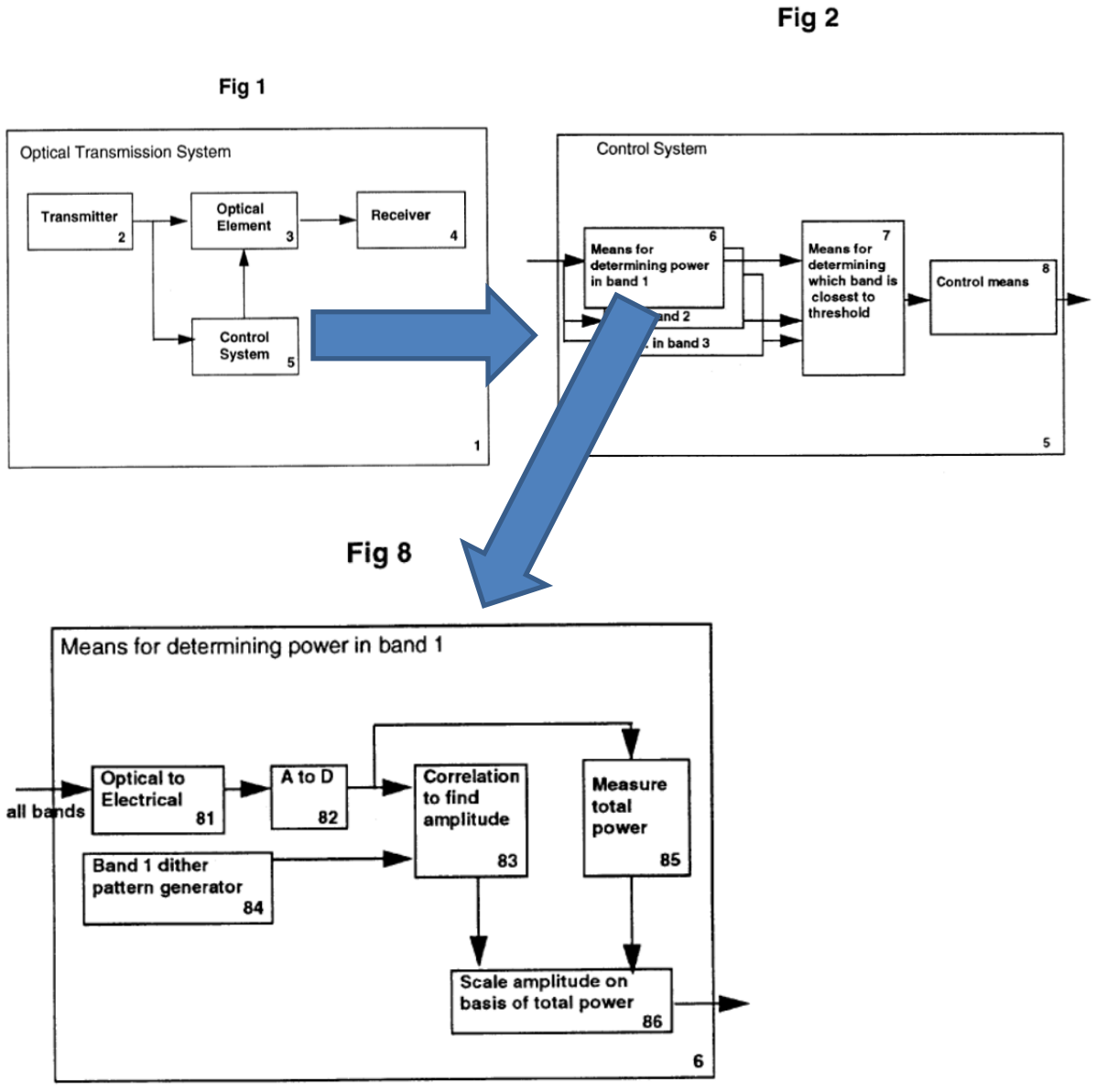
Just as the asserted combination fails to disclose or suggest a transmitter "having a laser" and a receiver all on a transceiver card, the asserted combination fails to disclose or suggest an "energy level detector" on the same transceiver card. Petitioners' challenge of claim 1 clearly fails.

c) Petitioners' Proposed Combination of Roberts '840, Ade, and Graham Also Fails Because Petitioners Fail to Show the Required Thresholds

Petitioners' challenge based on Roberts '840, Ade, and Graham fails for another reason. As introduced above, claim 1 requires an energy level detector "to measure an energy level of the optical signals," and the energy level detector includes "a plurality of thresholds." Pet., 65-69. Petitioners assert that the claimed "energy level detector" feature of claim 1 is disclosed in Roberts '840. *Id.*

Petitioners specifically point to the disclosed "means 6" of Roberts '840's control system 5 shown on Fig. 2. *Id.*, 65. But this argument fails for multiple reasons.

First, Fig. 8 of Roberts '840 shows "an example of a means for determining the power in each band" of module 6, which is introduced in Fig. 2:



In that system, the total power of a tapped portion of an optical signal is

measured (element 85). But in Roberts '840, the measured total optical power is not compared to any threshold. Rather, a scaled amplitude of a received dither signal, which is scaled on the basis of the total power, is compared to the thresholds. Roberts '840, 6:62-64, 6:65-7:6; *see also id*., 5:35-66; Figs. 3-4. Petitioners contend that "'[m]eans for determining which band is closest to the threshold 7' may indicate that a measured power has exceeded a threshold." Pet., 65 (*citing* Roberts '840, 5:53-67). But Petitioners are flat wrong to associate that operation with measuring an energy level of the optical signals, much less including a plurality of thresholds. Indeed, Petitioners and their declarant do not even mention the dither signals of Roberts '840, or argue that the dither signals are "phase-modulated," or propose any modification of the dither signals. Based on a proper understanding of Roberts '840, these claim elements are simply missing in the relied-upon references and Petitioners' analysis.

This error is also present in the "threshold" requirement itself. Petitioners next assert that the "thresholds" feature of claim 1 is also disclosed by Roberts '840. Pet., 68-69. Specifically, Petitioners assert that Roberts '840 discloses "***an upper limit*** to the optical power of the optical signal … [and] ***a lower power limit*** or threshold for the optical signal at the receiver …." Pet., 68-69 (*citing* Roberts '840, 1:20-30). However, Petitioners do not even attempt to correlate power limits to the dither-based amplitude-measurements in Roberts '840.

Accordingly, Ground 5 also fails because Petitioners have failed to show that all elements of claim 1 are present or even suggested in the proposed combination of Roberts '840, Ade, and Graham. As such, Petitioners' challenges to claim 1, and to all challenged dependent claims 2-12, based on Roberts '840, Ade, and Graham must fail.

2. Ground 5 Fails as Petitioners Do Not Set Forth a Proper Combination of Roberts '840 and Other References

Ground 5 also fails as Petitioners have failed to establish a proper modification of Roberts '840. Petitioners, instead, have used the invention of the '327 patent as a roadmap for the combination, without any showing of a reasonable expectation of success for the proposed modifications. *See In re Stepan Co.*, 868 F.3d at 1345-47. Petitioners admit that Roberts '840 does not "describe in detail" certain claimed features, including the structure of a receiver and transmitter and receiver. *See, e.g*, Pet., 61. Petitioners then attempt to modify Roberts '840 in view of Ade to fill in the missing details. But in so doing, Petitioners are performing the modifications with knowledge of the invention, and they only provide conclusory statements of motivation for the proposed modifications. For example, Petitioners' modification of Roberts '840 based on Ade takes only the parts of Ade that Petitioners find desirable, and ignores the full teaching of the reference. Pet., 60-62, 76-77.

Further, the lack of details in Roberts '840 is not an advantage in proposing

a combination of references. When addressing a broad disclosure in an obviousness challenge, it remains the duty of the challenger to show that a POSITA would have had a reasonable expectation of success to arrive at a successful result. *In re Stepan Co.*, 868 F.3d at 1345-1347. Yet Petitioners and their technical declarant have not even addressed this requirement. Thus, there is no showing that the proposed combination would have had a reasonable expectation of success.

For these reasons as well, Ground 5 must fail. Because Grounds 6-8 also rely upon the combination of Ground 5, Grounds 5-8 against claims 1-12, 22, and 33 uniformly fail.

3. Ground 6 Fails as Petitioners' Proposed Combination of Roberts '840, Ade, Graham, and Ikeda Fails to Disclose or Suggest the Elements Required by Claim 2

As Petitioners acknowledge, the combination of Roberts '840, Ade, and Graham fails to disclose the requirement of claim 1 that "the energy level detector includes an OR gate." Pet., 75-76. In Ground 5, Petitioners do not rely on Ikeda to remedy the shortcomings identified above with respect to claim 1. *Id*. Because claim 2 depends from claim 1, and inherently includes all elements of claim 1, Ground 6 fails for the same reasons as Ground 5, and Petitioners' challenge to claim 2 fails.

Further, in attempting to combine Roberts '840/Ade/Graham and Ikeda on

the same basis as asserted with respect to Ground 2, Petitioners' argument suffers from the same defects explained in Section IV.B.4 above. Petitioners incorrectly point to OR circuit 625 as allegedly disclosing an OR gate, even though Ikeda never refers to OR circuit 625 as being or including an OR gate. For at least these reasons, Petitioners' Ground 6 challenge of claim 2 fails.

4. Ground 7 Fails

a) Ground 7 Fails as Petitioners Do Not Set Forth Any Challenge to Independent Claims 14 and 25

Ground 7 indicates that claims 3, 4, 10, 22, and 33 are being challenged. As noted above, claims 22 and 33 are dependent claims that depend from independent claims 14 and 25, and this proceeding contains no challenges directed against claims 14 and 25. For similar reasons as stated in Section IV.B.5.a above, Petitioners' challenges to claims 22 and 33 are incomplete. The Board should exercise its discretion and decline to institute the requested challenges to claims 22 and 33.

b) Ground 7 Also Fails as the Proposed Combination of Roberts '840, Ade, Graham, and Hooijmans Fails to Disclose the Elements of Claims 3, 4, 10, 22, and 33

In challenging claims 3, 4, 10, 22, and 33, Petitioners attempt to rely on Hooijmans for a teaching of phase modulation. Pet., 76-77. Petitioners do not rely on Hooijmans to satisfy the missing elements in claim 1 (or claims 14 and 25) or to provide the missing motivation as described in Section IV.C.2 above.

Accordingly, Ground 7 fails for the same reasons as Ground 5, and Petitioners' challenges to claim 1, and to its dependent claims 3, 4, and 10, fail.

Petitioners' challenge to dependent claims 22 and 33 also fail for the reasons stated above in Section IV.B.5.b. In particular, Petitioners' reliance on the channel-based "upper" and "lower" signals fail to disclose or suggest that "the plurality of thresholds bound an acceptable energy range for the received light," as recited in claims 22 and 33.

5. Ground 8 Fails as Petitioners Have Not Shown That Kobayashi Discloses the Claimed Features

Petitioners again rely on Kobayashi in an attempt to satisfy the requirement of claim 5 of "a photodiode and a line[a]r or logarithmic amplifier scaling an output of the photodiode." However, Petitioners do not rely on Kobayashi to satisfy the missing elements in Ground 5 or to provide the missing motivation as described in Section IV.C.2 above. Accordingly, Ground 8 fails for the same reasons as Ground 5, and Petitioners' challenge of dependent claim 5 fails.

Additionally, Petitioners' analysis of Kobayashi mirrors and incorporates their analysis in Ground 4. Pet., 81-82. For similar reasons provided above in Section IV.B.6, Kobayashi fails to disclose or suggest the requirements of claim 5.

D. Petitioners' Grounds Are Redundant and Increase the Board's and Patent Owner's Burdens Unnecessarily

Petitioners' Grounds based on Treyz and Grounds based on Roberts '840 are

substantively redundant of each other; the sole difference is Petitioners' substitution of Roberts '840 in Grounds 5-8 for Treyz in Grounds 1-4. Each reference is asserted in four Grounds, and Petitioners' analysis in the Treyz Grounds mirrors Petitioners' analysis in the Roberts '840 Grounds. For example, Petitioners assert nearly identical arguments in support of the purported modifications of Treyz and Roberts '840. The near-identical analysis reveals that these challenges are in fact redundant of one another. Excerpts of each petition are presented below.

Petition, p. 29 (Ground 1)	Petition, p. 62 (Ground 5)
A POSITA would have recognized that Treyz' optical card would benefit from inclusion of Ade's transceiver. *Id*. For example, implementing transmitters and receivers on the same card (rather than on separate cards) would reduce the total number of cards in a communications system, thereby reducing the cost and complexity of the system. *Id*.	A POSITA would have recognized that Roberts '840's optical network would benefit from inclusion of Ade's transceiver. Ex. 1003, ¶ 88. For example, implementing transmitters and receivers on the same card (rather than on separate cards) would reduce the total number of cards in a communications system, thereby reducing the cost and complexity of the system. *Id.*
Petition, p. 58 (Ground 4)	Petition, p. 81 (Ground 8)
A POSITA would have found it obvious to use Kobayashi's improved optical	A POSITA would have found it obvious to replace Roberts '840's power

power monitor to implement Treyz' "optical channel monitor 47" Ex. 1003, ¶ 105. A POSITA would have been motivated to do so to obtain the self-evident benefits of an accurate and linear representation of a monitored optical power, as provided by Kobayashi's implementation. *Id.* … The proposed combination would have constituted a combination of known elements, yielding only predictable results. *KSR*, 550 U.S. at 416. … A POSITA would have viewed Kobayashi's power monitor as similar to Treyz as both patents relate to the same application: optical performance monitoring. *Id.*	monitoring circuitry with Kobayashi's improved energy level detector [to] produce a more accurate representation of a monitored optical power. Ex. 1003, ¶ 109. Specifically, it would have been obvious to replaces Roberts '840's photodiode and transimpedance amplifier with Kobayashi's photodiode, transimpedance amplifier, and control circuit. Id. The proposed combination would have constituted a combination of known elements, yielding only predictable results. KSR, 550 U.S. at 416. … A POSITA would have viewed Kobayashi's power monitor as similar to Roberts '840 as both patents relate to the same application: optical performance monitoring. Id.

The above excerpts are merely exemplary of the repetitive analysis. The challenges throughout are in fact redundant of one another, from the claims being challenged per Ground to the bases for modifying the primary references.

Moreover, Petitioners fail to address any non-redundant differences in these challenges.

Given that the Examiner considered Treyz fully and accurately, this redundancy shows that the Examiner would have also allowed the '327 patent over Roberts '840. Petitioners have not argued that either reference is substantively different. *See* Pet., 11-13, 14 n.1 (arguing priority dates of the references). Accordingly, the Board should exercise its discretion to deny the challenges based on Roberts '840 as well as Treyz. Alternatively, instituting redundant grounds would needlessly increase the burden on the Board and Patent Owner, and also unnecessarily increase the cost of defending the patent-at-issue to Patent Owner. As such, Patent Owner respectfully asks that the Board use its discretion under 35 U.S.C. §§ 314(a) and/or 325(d) to deny redundant challenges against the '327 patent.

V. CONCLUSION

For the reasons presented above, the Petition's grounds of challenge are improperly supported and should be denied.

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CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE complies with the type-volume limitation in 37 C.F.R. § 42.24(b)(1). According to the word-processing system's word count, the brief contains 12,770 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

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